AN OPTIMAL FLOATING-POINT EXPRESSION
TRANSLATION METHOD BASED ON PATTERN MATCHING

ABSTRACT

Embodiments of the present invention include code generation methods. In one embodiment, a table of patterns is generated. Each pattern in the table includes an FMA (fused multiply-add) DAG (Directed Acyclic Graph), a canonical form equivalent of the FMA DAG, and a shape corresponding to the canonical form equivalent. Incoming floating-point expressions are matched against the patterns in the table during compilation of a program to obtain optical sequences of FMA, FMS (fused multiply-subtract), and FNMA (fused negate multiply-add) instructions as compiled instructions for computing the floating point expressions.